

SHIRAI et. al. JP 2000 336029 A  
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## DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to the breast cancer depressant  
which makes conjugate linolenic acid an active principle.

[0002]

[Description of the Prior Art] Although a breast cancer stood the 1st place of a  
woman's cancer in the West, there were conventionally in Japan. [comparatively  
few] However, a breast cancer patient number increases quickly also in Japan in  
recent years, it is ranked as the higher rank now, and it is expected that it  
becomes primacy someday. As a cure for a breast cancer, a surgical operation,  
radiotherapy, a chemotherapy, endocrinotherapy, immunotherapy, etc. are  
performed. Especially, although a surgical operation is the most positive cure,  
when it is expected that cancer is progressing even to remoteness, general  
treatments, such as a chemotherapy, endocrinotherapy, and immunotherapy, are  
needed.

[0003] On the other hand, the method and preventive medicine which prevent a  
breast cancer daily are seldom known, but have become one of the fear for the  
woman. Then, safety is high and development of the breast cancer depressant  
which controls or prevents a breast cancer effectively is desired strongly. The  
report of that the conjugated linoleic acid which is one of the conjugate fatty acid  
has breast cancer depressant action is made about this point (Cancer Research,  
51, 6118-6124-1991). However, as far as this invention persons get to know, the  
report of the cancer depressant action of conjugate linolenic acid is not yet made.

[0004]

[Problem(s) to be Solved by the Invention] An object of this invention is to provide  
the new breast cancer depressant used in foodstuffs and the drugs field.

[0005]

[Means for Solving the Problem] This invention persons find out having the breast  
cancer depressant action excellent in conjugate linolenic acid, and came to  
complete this invention. That is, this invention provides a breast cancer  
depressant which makes conjugate linolenic acid an active principle.

[0006]

[Embodiment of the Invention] As conjugate linolenic acid used by this invention,

9, 11, 13-octadeca TOERIN acid, 10 and 12, 14-octadeca TOERIN acid, and these mixtures are mentioned. As a gestalt of conjugate linolenic acid, fatty acid, Monod, G or triglyceride, sodium salt, potassium salt, calcium salt, phospholipid, lysophospholipid, and these mixtures are mentioned, and fatty acid, triglyceride, phospholipid, and calcium salt are especially preferred. The derivative of conjugate linolenic acid, for example, an ascorbic acid derivative, a mitomycin-C derivative, etc. can be used.

[0007]The breast cancer depressant which makes conjugate linolenic acid the active principle" by this invention can be used as not only drugs but breast cancer control, or prevention foodstuffs (feed is included). As an example of the concrete mode of breast cancer control (prevention) foodstuffs, the conjugate linolenic acid content oil and fat products produced by making convert linolenic acid in fats and oils into conjugate linolenic acid can be mentioned by giving alpha-linoleic acid content fats and oils (for example, a beefsteak plant oil or the linseed oil) to an alkali conjugation reaction. An "alkali conjugation reaction" is a reaction which isomerizes fatty acid in an alkali organic solvent solution, and is converted into conjugate fatty acid. The method of using a potassium hydrate as alkali and using ethylene glycol typically as an organic solvent is known (the collection p171 (1995) of the 34th oil recovery study debate lecture gists, and the standard fats-and-oils assay method 2.4.16-17). J. According to Am.Oil Chem. Soc., 36, and 631 (1959), in a potassium hydrate ethylene glycol solution, 200 \*\*, if methyl linolenate is heated for 7 hours, it will be reported to perform about 82% of conjugation. this invention persons propose previously the manufacturing method of the conjugated linoleic acid whose inversion rate improved which uses propylene glycol as an organic solvent -- \*\*\*\* (the Japanese-Patent-Application-No. No. 288094 [ eight to ] specification) -- according to this method, conjugate linolenic acid content fatty acid can be obtained. When petroleum stock fat is a beefsteak plant oil, the conjugate linolenic acid content in the conjugate linolenic acid content fats and oils obtained by such an alkali conjugating method, Generally, 10 to 90%, it is 30 to 90% preferably, and the remaining ingredients are pulmitic acid, stearic acid, oleic acid, linolic acid, non-conjugate linolenic acid, etc.

[0008]When using as medicine "the breast cancer depressant which makes conjugate linolenic acid the active principle" of this invention, Conjugate linolenic acid can be combined with other ingredients (lactose, DEMPURU, dextrin, gum arabic, etc.), for example, medicinal diluents, and it can be used with the gestalt of a tablet, a capsule, or a fluid. Even when using the breast cancer depressant by this invention by the above foodstuffs and medicinal any, generally [ meal weight ] the conjugate linolenic acid which should be taken in by that cause is 0.05 to 1% preferably 0.01 to 3%.

[0009]The following examples of an experiment show that conjugate linolenic acid has breast cancer depressant action.

[Example]Conjugate linolenic acid and conjugated linoleic acid which were used in the following examples are prepared by the following method.

[Preparation of conjugate linolenic acid (content fatty acid)] The potassium hydrate 50g was dissolved in the propylene glycol 150g, nitrogen bubbling was

performed for after-dissolution 20 minutes, and temperature up was carried out to 170 \*\*. The beefsteak plant oil 100g was added after temperature up, and 170 \*\* was made to react under a nitrogen air current for 1 hour. Reaction mixture was cooled to the room temperature after ending reaction, and chloride was added, and it was made neutrality, and stirred for 15 minutes. Then, the reaction solution was adjusted the pH to 3, distilled water was added, and it stirred for 5 minutes. Subsequently, hexane extraction was performed 3 times, a NaCl solution and distilled water washed the hexane solution 5%, and the deMinakuchi fault was performed. Hexane was distilled off after \*\*\*\* and conjugate linolenic acid content fatty acid was obtained. The fatty acid composition of the obtained conjugate linolenic acid content fatty acid is shown in following table-1.

[Preparation of conjugated linoleic acid (content fatty acid)] The beefsteak plant oil 100g was replaced with the safflower oil 100g, and also conjugated-linoleic-acid content fatty acid was prepared by the method of preparation of above-mentioned conjugate linolenic acid, and the completely same method. The fatty acid composition of output is shown in table-1.

[0010]

table-1 -- fatty-acid-composition conjugated-linoleic-acid content fatty acid of conjugated-linoleic-acid content fatty acid and conjugate linolenic acid content fatty acid Conjugate linolenic acid content fatty acid C16:0 (palmitic acid) 6.9 6.1 C18:0 (stearic acid) 2.4 2.0 C18:1 (oleic acid) 15.3 19.0 C18:2 (linolic acid) 0.7 0.2 conjugated linoleic acid 74.1 13.4 conjugate linolenic acid - 53.0, others 0.6 6.3[0011]After carrying out preliminary breeding of the Sprague-Dawley system female rat of 16 weeks old of examples, it divided into a total of three groups (each 20 groups) of a control group, a conjugated-linoleic-acid addition group, and a conjugate linolenic acid addition group, and bred for 20 weeks. A control group considers it as elemental diet (feed by Oriental Yeast Co., Ltd. "MF"). The conjugated-linoleic-acid addition group made the food intake method the free food intake as experimental diet which added the above-mentioned conjugated-linoleic-acid content fatty acid to elemental diet and to which the conjugate linolenic acid addition group added each above-mentioned conjugate linolenic acid content fatty acid 0.1% to elemental diet. One week was medicated with the breast cancer carcinogenic agent (2-amino-1-methyl-6-phenylimidazo [4 and 5-b] pyridine:PhIP) in 1 time and a total of 8 times compulsion stomach in the quantity of 100 mg per weight of 1 kg to the rat. The conjugated-linoleic-acid addition group and the conjugate linolenic acid addition group were fed to eight weeks of breeding starts in the above-mentioned conjugated-linoleic-acid addition foods and conjugate linolenic acid addition foods, and the additive-free meal (it usually eats) was given to them after it. The number of cancers was measured by palpation after the experiment start weekly, and breast cancer occurrence frequency and a breast cancer generated number were counted temporally. Breast cancer occurrence frequency is a rate of the rat which the breast cancer per 20 rats generated, and a breast cancer generated number shows the number of the breast cancers which per rat generated.

[0012]As a result, the rat from which all three groups die was not observed during the breeding. As a weight change is shown in drawing 1, there is no significant

difference in being between groups, and both groups were grown favorably. Breast cancer occurrence frequency and a breast cancer generated number were able to be made to control intentionally by prescribing conjugate linolenic acid for the patient, as shown in drawing 2 and 3. It was checked that the breast cancer depressor effect of conjugate linolenic acid is superior to conjugated linoleic acid. It turned out that generating of a breast cancer is controlled effectively, without influencing growth of a rat from the above thing, when the rat was made to take in conjugate linolenic acid.

[Translation done.]

## DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] It is a graph which shows the weight change during the breeding period of the rat in Example 1.

[Drawing 2] It is a graph which shows transition of the breast cancer generated number in the breeding period of the rat in Example 1.

[Drawing 3] It is a graph which shows transition of the breast cancer occurrence frequency in the breeding period of the rat in Example 1.

## MEANS

[Means for Solving the Problem] This invention persons find out having the breast cancer depressant action excellent in conjugate linolenic acid, and came to complete this invention. That is, this invention provides a breast cancer depressant which makes conjugate linolenic acid an active principle.  
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[Embodiment of the Invention] As conjugate linolenic acid used by this invention, 9, 11, 13-octadeca TOERIN acid, 10 and 12, 14-octadeca TOERIN acid, and these mixtures are mentioned. As a gestalt of conjugate linolenic acid, fatty acid, Monod, G or triglyceride, sodium salt, potassium salt, calcium salt, phospholipid, lysophospholipid, and these mixtures are mentioned, and fatty acid, triglyceride, phospholipid, and calcium salt are especially preferred. The derivative of conjugate linolenic acid, for example, an ascorbic acid derivative, a mitomycin-C derivative, etc. can be used.

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## EXAMPLE

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[Translation done.]

## CLAIMS

[Claim(s)]

[Claim 1]A breast cancer depressant which makes conjugate linolenic acid an active principle [Claim 2]The breast cancer depressant according to claim 1 in which conjugate linolenic acid is chosen from 9, 11, 13-octadeca TOERIN acid, 10 and 12, 14-octadeca TOERIN acid, and these mixtures.

[Claim 3]The breast cancer depressant according to claim 1 or 2 whose conjugate linolenic acid is a gestalt of fatty acid, sodium salt, potassium salt, calcium salt, triglyceride, diglyceride, monoglyceride, phospholipid, or these mixtures.

[Claim 4]Foodstuffs which have the breast cancer depressant action containing the conjugate linolenic acid according to any one of claims 1 to 3.

[Claim 5]The foodstuffs according to claim 4 which are the gestalten of oil and fat products containing conjugate linolenic acid.

[Claim 6]The foodstuffs according to claim 5 obtained when said oil and fat products give linseed oil to an alkali conjugation reaction.

[Claim 7]The breast cancer depressant according to any one of claims 1 to 3 used as medicine.

[Translation done.]